1. (Currently Amended) A worm gear mechanism for a power-assisted automobile steering mechanism, comprising:

a rotatable ~~first~~ cylindrical worm ~~gear~~ having a plurality of worm teeth that rotate about a first axis; and

a rotatable ~~second~~ cylindrical worm gear having a plurality of worm gear teeth that rotate about a second axis, where the first axis and the second axis are substantially perpendicular;

where a profile of a surface face of each of the plurality of worm teeth ~~of the first and second gears~~ includes both a concave region and a convex region that collectively span a height of each of the plurality of worm teeth ~~of the first and second gears~~, and each of the plurality of the worm gear teeth includes both a concave region and a convex region that collectively span the height of each of the plurality of worm gear teeth; and

where when the worm and worm gear ~~first and second gears~~ rotate with respect to each other a portion of the concave and convex regions of one of the worm teeth ~~first and second gears~~ mesh with a portion of the convex and concave regions, respectively, of the worm gear teeth, ~~other one of the first and second gears during the rotation of the first and second gears~~ such that ~~linear contact occurs between the surface faces of the first and second gears, and where the~~ linear contact occurs over the height dimension taken across at ~~of~~ least three worm teeth and worm gear teeth pairs ~~each of the plurality of teeth of the first and second gears during rotation of the first and second gears~~at substantially separate piecemeal height regions along the surface faces of the at least three tooth pairs so the separate piecemeal regions together establish the linear contact along the height dimension, where the height dimension is substantially perpendicular to both the first axis and the second axis.

2. (Currently Amended) The worm gear mechanism of claim 1, where the convex region is piecewise convex with an approximate equal curvature of the surface face of a tooth of the ~~first~~ worm ~~gear~~ that corresponds to the concave region of the surface face of a tooth of the worm ~~second~~ gear.

3. (Currently Amended) The worm gear mechanism of claim 1, where the concave region is piecewise convex with an approximate equal curvature of the surface face of a tooth of the worm ~~first gear~~ that corresponds to the convex region of the surface face of a tooth the worm ~~second~~ gear.

4. (Currently Amended) The worm gear mechanism of claim 1, where the concave region is disposed in a region adjoining a base of a tooth and the convex region is disposed in a region adjoining a tip of a tooth.

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Currently Amended) The worm gear mechanism of claim 1, where thicknesses of the teeth of the worm and worm gear ~~first and second gears~~ are adapted to the material properties of the worm and worm gear~~first and second gears~~.

9. (Currently Amended) The worm gear mechanism of claim 8, where the thickness of the teeth of the worm ~~first gear~~ is greater than the thickness of the teeth of the worm gear~~second gear~~.

10. (Cancelled)

11. (Cancelled)

12. (Currently Amended) The worm gear mechanism of claim 1, where the profile of the surface face of each of the plurality of teeth contains no involutes.

13. (Currently Amended) The worm gear mechanism of claim 1, where the worm ~~first gear~~ is metallic and the worm gear ~~second gear~~ is plastic.

14. (Currently Amended) The worm gear mechanism of claim 1, where each tooth of the worm ~~first~~ and worm gear ~~second gears~~ has a concave surface face profile in a region near a base of the tooth and a convex surface face profile in a region near a tip of the tooth.

15. (Currently Amended) A worm gear assembly, comprising:

a worm with a plurality of worm teeth that rotate about a first axis; and

a worm gear with a plurality of worm gear teeth that rotate about a second axis;

where each tooth of the worm and each tooth of the worm gear has a concave profile in a region near a base of the tooth and a convex profile in a region near a tip of the tooth; and

where when the worm and worm gear rotate with respect to each other a portion of the concave and convex regions of one of the worm teeth mesh with a portion of the convex and concave regions, respectively, of the worm gear teeth, such that linear contact occurs over a height dimension taken across at least three worm teeth and worm gear teeth pairs at substantially separate piecemeal height regions along surface faces of the at least three tooth pairs so the separate piecemeal regions together establish the linear contact along the height dimension, where the height dimension is substantially perpendicular to both the first axis and the second axis

~~where during a first period of time when the worm is rotated with respect to the worm gear a portion of the concave profile of a worm tooth meshes with a portion of the convex profile of a worm gear tooth such that linear contact occurs, where during a second period of time when the worm is rotated with respect to the worm gear a portion of the convex profile of a worm tooth meshes with a portion of the concave profile of a worm gear tooth such that linear contact occurs, and where the first and second periods of time are of a total duration such that the linear contact collectively spans a height of each worm tooth and a height of each worm gear tooth~~.

16. (Previously Presented) The gear assembly of claim 15, where the worm is metallic and the worm gear is plastic.

17. (Currently Amended) A worm gear assembly, comprising:

a metallic worm ~~gear~~ and a plastic worm ~~mating~~ gear each having teeth which engage each other during rotation of the worm ~~gear~~ and the worm ~~mating~~ gear, where a face of each tooth comprises a concave region and a convex region, where when the worm and worm gear rotate with respect to each other a portion of the concave and convex regions of one of the worm teeth mesh with a portion of the convex and concave regions, respectively, of the worm gear teeth, such that linear contact occurs over a height dimension taken across at least three worm teeth and worm gear teeth pairs at substantially separate piecemeal height regions along surface faces of the at least three tooth pairs so the separate piecemeal regions together establish the linear contact along the height dimension, where the height dimension is substantially perpendicular to both the first axis and the second axis

~~where linear contact over a height of each of the teeth occurs when the teeth of the gear and the mating mesh during rotation of the gears, and where the linear contact is such that the convex region of a gear tooth and the concave region of a mating gear tooth are in contact with each other during a first portion of the rotation of the gears and such that the concave region of a gear tooth and the convex region of a mating gear tooth are in contact with each other during a second portion of the rotation of the gears~~.